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quarter while I was in the country. It is impossible for me to speak with any degree of certainty ; but from the measurements I took with the trocheameter, and bearings, I should suspect that the Bamanguato, or Bakaa Hills, are laid down rather far to the north in Arrowsmith's map. Neither does the course of the Limpopo River, as laid down, agree with native testimony. I shall take the liberty of sending both sketches along with the Journal, to give you some idea of the country traversed. The sketches only commence at the Bamanguato town.

X.—*Notes on the Geography of Central Africa, from the Researches of Livingston, Monteiro, Graça, and others.*

By JAMES MACQUEEN, Esq., F.R.G.S.

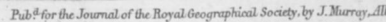
Read, December 10, 1855.

THE important and repeated journeys of our Medallist, the Rev. Dr. Livingston, of the London Missionary Society, in Southern Central Africa, have, as regards all that great and interesting portion of it, laid open in a generally correct form a large extent of Africa, which was only known to Europeans by uncertain and vague reports. The results of these laborious journeys have been of vast importance to Africa in particular, and to geographical knowledge in general. Having so many important points, and correctly fixed, it enables us to fix with tolerable accuracy several other places in Southern Central Africa of equal, if not of greater value to the world.

To no one in modern times have this country and the world been more indebted for geographical knowledge and researches than to Dr. Livingston. His labours and dangers have been great. They have been voluntarily undertaken, and have cost no country, and more especially this country, anything ; so different from the researches and labours of others. But it is to be hoped that this great country will not long allow him to go without a proper reward.

His journals, and the delineation of his journeys, are already before the world. These speak for themselves, and require no further elucidation here. They are, in their leading features, best pointed out by a reference to and inspection of the map accompanying this. It is to connect these with the generally correct information obtained from the journeys and labours of other African travellers that is my present object. To do this, it is necessary to glance generally, and as shortly as possible, at the information that has been obtained by the travellers after-mentioned, but little known to the public in general, regarding the more eastern and central parts of Africa. The Society, as we proceed, will perceive by a reference to the map, the variety and importance of these, and how, when one part is correctly fixed, it invariably leads

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to fixing other parts in their true position, or nearly in their true position, and to make that clear which was formerly doubtful, and which otherwise could not be safely determined.

The Leeambye is clearly the river previously heard of as the Cuama; the great southern branch of the river known in its lower course as the Zambesi. The cataract which was reported to exist in this branch of the river, a great distance in the interior, is now accurately ascertained and fixed. The very high lands which now form the southern bank of this river in its middle course, towards the source of the Manica, the rivers of Sofala and branches of the Limpopo, as stated by the early Portuguese authorities, and adopted by me in my map of 1840, are now well ascertained to exist. Mr. Moffat, in his late journey to Moselekatse, pointedly tells us that after passing the Sha'he, a branch of the Limpopo, the land became exceedingly mountainous as he approached the residence of that well-known African chief lately settled in this quarter, and at no great distance from the southern bank of the Leeambye or Zambesi. This is important. These mountains to the eastward of the residence of this chief (about 200 miles) are reported to be in some parts covered with snow.

Meeting the high lands mentioned, the river turns its course nearly N.E., and after passing Chicova runs a distance of probably 70 miles over rapids and cataracts, called Sacumbe, which render navigation almost impossible. Emerging from these, the river continues its course to the E., having above these parts, as we shall presently see, received the Zambesi and the Aroango from the N.; and thence pursues its way eastward by Teté, a mighty and important stream, being, at a short distance below that place, above half a mile broad, with a very rapid current.

The distance from Teté to Zumbo, at the junction of the Aroango with the Zambesi, has hitherto been erroneously stated from the careless manner in which the Portuguese accounts have been collected, and this too from imperfect translations. Neves, in his work of 1830, and others, give it the most correctly. He tells us that from Teté to the cataract or falls of Succumbe, in the Zambesi, is 30 leagues, from Sacumbe to Zumbo 28 leagues. This will place Sacumbe in $31^{\circ} 20'$ E. long., and $15^{\circ} 55'$ S. lat.; and Zumbo in about $15^{\circ} 36'$ S. lat., and $29^{\circ} 36'$ E. long. The river, according to Gamitto, above Teté descends from the north-westward. Zumbo was at one time an important Portuguese commercial station, to which gold from the rich mines of Abutua was brought, and ivory and other articles even from the Orange River. It is now nearly desolate, from the decay of the Portuguese power in this quarter, and from African wars and dissensions in the more interior parts.

The high lands in Southern Tropical Africa which separate the

waters which flow westward into the Atlantic Ocean, and eastward into the Indian Sea, were stated by actual observation by the Hungarian officer, Ladislaus Amerigo, in 1851, to be in $10^{\circ} 6'$ s. lat., and $21^{\circ} 19'$ E. long. Dr. Livingston more fully and precisely confirms this; so also were those laid down in my map of 1840, after a rigid research amidst the best authorities I could then find.

But before proceeding to enter upon the description and delineation of some of the rivers which flow eastward from this point of Africa, the chief object of this paper, it becomes necessary to turn for a moment to the consideration of the rivers and countries much more to the eastward, to show what has been examined and described in those parts by late accurate travellers, late at least as far as Western Europe knows them. This will enable us to see the value and importance of their geographical researches and discoveries, and fix some of those more exactly than could otherwise have been done. The great importance of Dr. Livingston's discoveries, and others to which I am about to draw the attention of this Society, will thus become more apparent.

The three best of these authorities which it is here considered necessary to notice, are, *first*, Dr. Lacerda, a scientific man, who was despatched by the Portuguese Government on a special mission from Mozambique to Cazembe, in 1797. *Second*, Pedro de Baptista, a Portuguese, and servant to a Portuguese merchant, who in a trading journey crossed the country from Angola to Teté, and returned safe, between the years 1806 and 1811. His journeys are very valuable, as every day's march is carefully noted, as also the number of hours travelled each day. In the eastern part this accuracy is established by Dr. Lacerda's astronomical observations. *Third*, we have the narrative of the diplomatic mission despatched by the Portuguese Government from Teté to Cazembe in 1830-1832, only published this year at Lisbon, and received in this country a few months ago. Of these the latter is most diffuse, entering minutely into everything that the conductors, Major Monteiro and Captain Gamitto, saw or heard of these countries; but Dr. Lacerda's is the most useful, from the few important astronomical observations it contains. The Doctor died immediately after he had reached Lucenda, or Lunda, the capital of Cazembe, and hence the position of that important place has not been exactly ascertained; but as Monteiro and Gamitto give us the bearing and distance travelled every day throughout their whole journey, we cannot err far in fixing the position of Lunda by their bearings and distances, starting from the point of Lacerda's last observation. All three travellers went over nearly the same ground, from Teté to Cazembe. Where Monteiro and his attendants deviated occasionally from the track of the others, they

took in, and reached, and stopped at all the same important places noted by the former.

The position of Teté as taken is sufficiently accurate. It is a little (*see* P.S.) to the eastward of Mazavamba, which latter is two days' journey distant from the Aroango of the N., there being some smaller streams of that name much more to the S. At Mazavamba, Dr. Lacerda made his observation $12^{\circ} 33'$ S. lat., and $41^{\circ} 26' 30''$ E. long. of Lisbon, $32^{\circ} 18' 30''$ E. of Greenwich. At Muíro Achinto he took another, namely $10^{\circ} 20' 35''$ S. lat. and $39^{\circ} 10'$ E. long. from Lisbon, $30^{\circ} 2'$ E. of Greenwich. Taking Monteiro's bearings and distances from hence, we have the true bearing N. 27° W., and the distance made good 150 m. This brings Lucenda or Lunda, the old capital of Cazembe, to be in $8^{\circ} 15'$ S. lat. and 29° E. long.; but this may properly and probably fairly be corrected thus: the observations made at Sena by British officers, make Sena 30' more to the E. than Lacerda has made it, very likely from the greater accuracy of their instruments. Assuming that the other observations made by Lacerda should to this extent be corrected, it would make the other two places mentioned 30' each more to the W., and Lucenda thus in 29° E. long. and $8^{\circ} 10'$ S. lat., and so I have taken them.

The Society will presently see the vast importance of these facts, and the others about to be stated: to both I have to beg their particular attention. From Teté to the Aroango, all the travellers, but especially Gamitto, tell us that the land is very mountainous. The Sierras rise to a great height, yet the country is fruitful and very populous. From R. Bua to Sierra Capire, the streams crossed run to the eastward and to the Chire, but all the others run W. and S. to the Aroango and the Zambesi. Beyond the Aroango about 30 miles is the Sierra Maxenga, which rises to the height of nearly 17,000 feet above the level of the sea. From this point, where crossed by Monteiro, it ran on the one hand N.E. (a branch also running W.) and on the other hand it stretched away S. to the Zumbo and Island, where the Arroango meets the Zambesi, dividing both to the S. and to the N. the valley of the Zambesi and the Aroango. From Zumbo on the S., an inspection of the map will show that the chain runs still farther S. to the chain of high land in the kingdom of Chidam, belonging to the great empire of Monomotapa; thence it runs southwards to the Dragenberg mountains, near a spur of which, at the junction of the Likua and the Elephant Rivers, the hills on their W. side rise above the limits of snow. To the N.E. the ridges run to the high lands which bound the Lake N'yassa, as it is called, to the S., in which are the sources of the Zambesi, the Aroango, and the Chire, or Xire, or Luaba, and also the River of Mozambique.

From the summit of the Sierra Maxenga the view is most beau-

tiful and extensive, to the N.W. bounded by the horizon only. The land thence, almost to Cazembe, is generally level, with only a few dwarf shrubs upon it, and a very scanty population. Through these levels the numerous streams hold their sluggish course, and are so tortuous that the traveller crosses and recrosses the stream, increased or diminished according to his course, without his knowing or suspecting that it is the same river, and sometimes the same river under a different name. I shall not fatigue the Society by dwelling more largely on this point. From the Aroango to Sierra Maxenga the country is inhabited by the Cheva nation or tribe, and from the Sierra Maxenga to within a short distance of Lunda it is inhabited by the Movizas, partly an agricultural, yet more inclining to be a pastoral, but generally an indolent and careless people. The travellers found on either hand several lakes, some greater, some smaller, the remains probably of the waters of the inundation. The vast plains of level country already mentioned are here and there studded with fine, but insulated clumps of trees, each where they appear rising like a beautiful green island in the midst of the ocean.

Let us next attend to the important point, namely, the magnitude of the principal rivers where the travellers crossed them; this considered will give us reasonable data to determine the distance to their respective sources. Where Monteiro and his party crossed the Arroango in their advance at some distance below where Pedro and Lacerda crossed it, they found the bed of the stream 150 fathoms broad, the banks 12 fathoms high, the water then occupying two thirds of the breadth of the bed, and the depth $3\frac{1}{2}$ feet, with a swift current. This was in the beginning of September, the end of their dry season. It overflows its banks during the rains. It runs W. and then S., and joins the Zambesi at an island near the Zumbo station, calculated to be 70 leagues, or 210 m. distant. In his advance Lacerda found this river, August 25th (the dry season), 18 fathoms broad, and depth 2 feet 9 inches. It joins the Zambesi, he says, at the village of Zumbo, founded at the confluence. Pedro, in his advance (the wet season) to Teté, found the river 30 fathoms broad. The Doenca and the Pamasi, both large streams, join it a little below this point, and at short distances on its W. side. Next let us take the Zambesi; Gamitto found it, below where Lacerda crossed it, 80 fathoms broad, banks 5 fathoms high, and depth $3\frac{1}{2}$ feet (dry season September), and with a very rapid current (the country hilly), equal to 9 m. per hour. Many shell-fish on its shores. Lacerda, in his advance (the dry season, September), found this river 25 fathoms broad, nearly 4 feet deep. Pedro, in his advance to Teté, does not give the magnitude of this river, though one, the Lunbanhenge, he says, was in depth, the water up to the breast.

He calls the Zambesi, the Hianbeje, or the Diambeje of later travellers. On his return Monteiro found the Zambesi, or as he calls it, the Chambeze, 100 fathoms broad (country become plain) and $3\frac{1}{2}$ feet deep, with a very rapid current. This point was about 65 m. to the westward, being 20 m. to the southward, of the parallel where he first crossed it; both times were in the dry season. The course of the river here was thus about s.w. by w. This river cannot, as has been supposed, join the Luapula, because where Pedro crossed the latter, 210 m. distant, it was, and in the rainy season, only 340 feet broad.

There are, it may be observed, some rivers which run between the Zambesi and Lucenda, taking a northern course. The Luapula, which flows N.E. to the westward of Lucenda, is 55 m. to the s., about 50 fathoms broad, and so deep that it could not be forded. Lucenda is situated on the E. side of the river or lake Mouro or Mofo, about 10 m. broad, supplied by the river Canengoa, a small stream, about 20 ft. broad, which bounds the capital on its w. side, and afterwards, together with the river Lundo, joins the Luapula, or, as Gamitto calls it, the Guapula. The termination of these rivers was left doubtful. The Portuguese about Teté and these parts were inclined to consider them as the head-waters of the Chire. Lacerda's death, no doubt, prevented him from ascertaining this point. It is impossible that any of them can run to the Chire. A glance at the map and the position of the high land to the s. of Lake N'yassa will settle that point. Happily, I think, the matter is no longer left in doubt. The Arabs in the East, who visit all these places in the interior, have long told us that the waters of the rivers, such as the Luffia, that enter the sea to the s. of Zanzibar, rise far inland to the s.w. of Lake N'yassa, and come, such as the Luffia, from a large lake in the interior. Major Monteiro clears up the point by stating that they go, some to the Nhanja Grande and to the Indian Ocean by the Cuavo, or some other stream. He has, in his volume, edited, I believe, by Viscount Sa da Bandeira, stated several things which settle the point more decidedly than he had any idea of. There we learn that the word Nhanja is applied to either lake or river; that there is in the interior, and much to the n. of Cazembe, first, a Nhanja Mucuro Grande, or Great River, and next, the Nhanja Piqueno, or Little. The Great Nhanja, he says, is 9 leagues (30 geographical miles) broad; that it takes three days by a canoe to pass it, stopping two nights on the islands in it, and reaching the opposite shore on the third day. He further says that the current easterly is so strong that the canoes used in crossing it are compelled to pull in an oblique direction to enable them to pass. From his stating that the easterly current retards them, it is evident that he refers to parties passing

from the east shore to the west. Here we have a complete and satisfactory explanation of the information obtained by the Rev. Mr. Erhardt, and communicated to the Society at their last meeting, as to the Great Nienda on the N. and the Little Nienda on the S.; clearly corruptions of the word "Nhanja," or else the word "Nhanja" of it. He (Mr. Erhardt) says also that the Wavua or Vavua, who dwell about the sources of the Aroango, as they really do (see place on map), and who are great traders, and take trading journeys, of some months' duration, to the country of Monomoi, pass, on their way to it and the Great "Nienda," the rivers Murusura and Ruapura (Luapula), both of which run to the N.E. to the Indian Ocean. A glance at the map will show that in their journey they must cross both these rivers on their way to the large lake, and this, I think, decides the point that there are two separate and distinct lakes, namely, the Great and Little Nhanja, or "Nienda," as the Portuguese state and Mr. Erhardt has heard. This is very important, and, in my opinion, satisfactory, and leaves no room for any further doubt.

The magnitude of the rivers just mentioned, and at the season of the year stated, namely, the season before they become flooded, shows that we must look for their affluents at a considerable distance to the northward. Their affluents, it is clear, especially from the eastward, as relates to the Aroango, cannot be very numerous or important. The body of water in the Aroango was 20 fathoms broader than in the Zambesi, but then the current of the former was only about 3 or 4 miles per hour, while that of the latter was estimated to be 9 miles per hour. Now the quantity of water passing through any given space is as the square of the velocity. Both rivers were of the same depth. Hence the square of the velocity of the Aroango, say 4 miles per hour, is 16, but that of the Zambesi is 81; showing that it is much the larger stream, and that its sources must either be more remote, or that it must have a greater number of affluents. This latter the features of the adjacent country can scarcely allow to any great extent. Moreover, the river Ruanceze, about 11 m. N.W. of the Zambesi, joins the latter river a little to the S.S.W. It was 120 ft. broad, and, according to Lacerda, was deeper than the Zambesi. Lower down, the Ruanceze was 68 ft. broad and 15 ft. deep, the current south. Therefore its sources must be sought for in those high lands which bound the lake, hitherto known as or called N'yassa, on the S., between which and the sources of these rivers no river can pass to the eastward, either to form the Chire or any other river in that direction. The position assigned to their sources therefore cannot be materially wrong,—at least 130 to 150 miles distant.

It may not be out of place here to remark that the Bashukolompo, mentioned by Dr. Livingston as 30 days' journey (280 or 300 miles) eastward from Shesheke's town on the Leeambye, may be the Zambesi above-mentioned, in its southern course to the Cuama, the name of which the former takes and assumes as its own.

The positions of the important lakes in tropical Southern Africa, as here fixed, are the same as made out by me, more than ten years ago, from the information I had collected from authorities clearly deserving attention. The chief of these were, first, a journal of an Arab traveller or merchant into the interior from Zanzibar, obtained by an officer of the Indian Navy at Zanzibar, and given to me. This was the clearest and most important journey in these parts I ever met with; it was presented to the Society, and printed in their Journal, but, to my regret, on the map published in a following number, it was so placed as to make it tell a tale quite different to that which it really stated. Secondly, a journey of the same kind, which I obtained through the United States of America, from their Consul at Zanzibar; the errors contained in this were easily rectified: and thirdly, the different journeys into the interior, collected in Eastern Africa by those active and able men employed as Christian missionaries by the Church Missionary Society. There were many others; and from all these, carefully considered, the positions of the rivers and lakes in that portion of Africa, as now delineated, were placed. It is impossible for me, nor does it appear necessary in the present instance, to analyze all these, in order to show their discrepancies and agreements, and how easily, when all were carefully analyzed, they were reconciled. From a careful consideration of all these, the most northern part of the Great Lake is in about $3^{\circ} 45'$ s. lat., and its centre in 29° E. long.; its most northern part is the exact number of days' journey from the point where the most northern route struck its shores; and so also of the distance around its northern shore to the entrance of the great river which joins it from the w., called in its upper course the Rovo, or Rofoo—the Luffia; its northern shore is thus in about $3^{\circ} 45'$ s. lat., and its southern, say $6^{\circ} 35'$. The early Portuguese writers give no very inaccurate position to this lake, namely about E.S.E. from Fungeno, 42 days' journey distant. Dr. Krapf had heard that a large river issued from this lake, running westward (in this way native narrators often reverse the course of rivers), and by which he had at one time the intention to proceed, and to reach the Atlantic and Europe by the Congo. He would have found rivers running in that line, but in opposite directions.

Mount Kenia, the snow-covered mountain seen by Dr. Krapf, lies exactly under the Equator, and in 35° E. long. From thence

a range of very high hills rising above the line of perpetual congelation, and some of them volcanic, are to the westward, and their spurs approach to within a short distance of the northern shore of the great lake in question. Immediately to the north of Mount Kenia rises the most southern source of the Bahr el Abiad, the real Egyptian Nile; of this the information I have collected leaves no doubt. It is moreover in the very longitude where Ptolemy has placed it.

The lake in question has different names. It was well known to the early Portuguese discoverers on both the west and the east coasts. They, and in fact all accounts, placed it in the State of Mueno-Muge, but too much to the east, covering, as may be seen in De Lisle, from old Portuguese maps, a great portion of Africa to the northward and westward of Kilimanjaro. The Galla nation gave it more accurately, as being in the southern and south-western parts of their ancient extensive dominions, and held that it was so broad that it took a vulture three hours to fly across it. Well, allowing a little for their amplification, and that the three hours were only two and a half, and that the vulture sped at the rate of 60 m. per hour, that would give 150 m. for its breadth, which after all is no bad delineation for a Galla geographer.

Mueno-Muge, Mueno Muize, Monomoises, and Uniamese, relate to the same place and people, comprehending a large extent of country in the interior of Africa. The land on both sides of the lake is generally level and fertile, and the country pretty populous. From considerable research, and from the valuable work of Gamitto, I have ascertained the exact meaning of this and another African word, which clears up a good deal of African geography. The prefix Mono simply signifies great, lord or master; Muata has a similar signification, great, emperor, lord of, &c. Hence Monomoises means the great Moises or lord of the Moises or Movisas, while the Movisas or Moises which inhabit the country from the vicinity of the Aroango to near Cazembe are tribes of the same people. Hence also Monomotapa, the Great Motapa, and Muata Yanvo, the emperor of Yanvo, and Muata Cazembe, the emperor or lord of Cazembe.

There are few points in the interior geography of Africa better determined than the position of the Great Lake, and its distance from the sea-coast near Zanzibar. From an old friend, as has already been stated, an officer in the Indian navy, I several years ago received a manuscript, which he obtained at Zanzibar when there in an official character on an important mission. This paper contains the account of a journey made by Lief-Ben Said, an intelligent Arab trader, who, as leader of a caravan, had been twice at the Great Lake in the Monomoise country. Day by day his march is distinctly and clearly noted, describing the rivers

passed, and the nature of the country, hilly or level, with an account of the people who inhabit the districts and places that he passed through, with the distances in days' journeys carefully stated. He travelled at the rate of 9 or 10 m. each day; and it is well known that the daily rates of travelling by trading caravans in Africa are very regular, and scarcely ever vary. His caravan travelled, we shall assume, at the rate of $8\frac{1}{2}$ geographical m. per day, the rate, or rather less than the rate, that it is found they travel in other quarters. With this scale, and his specific bearings, we have the following results:—

The caravan started from Boamy, or Boami, mentioned by Dr. Krapf, a village at the mouth of the river Pangany, situated on its southern side, and in the month of September, 1831, the dry season of that part of tropical Africa. Thence they marched nearly w.s.w. 21 days, but occupying one month of the whole journey. They travelled through a hilly country, and crossed the different rivers marked on the map, one of them, the Montanero, on the fifth day, 200 yards broad. At the end of 21 days they came to the Bahar, a word meaning either sea or river, but river as pre-eminent to others, and most probably the Luffia. At this point also they came to the great river Matoney, much infested with hippopotami. From this point they travelled constantly in the direction of the setting sun, that is, due west, and close to the north bank of the river, passing Powaga, Sanga, &c. This distance occupied 18 days (in this portion there is obviously an error of five, that number being twice stated instead of once—difference, say 45 m.), and in three more they came to Sanga, leaving the river Matoney on the left hand, and, be it remarked, the hills or hilly country on the south or left hand also. The country then became level, principally sand and ironstone. In 10 days more they came to Sangara, which forms the eastern limits of the Monomoi country. The districts through which they had passed were populous; and since leaving the coast they had had no rain. From thence to the lake the country belongs to the Monomoi tribe, which are under four independent sovereigns. The people are very honest, and civil to strangers. The road to the lake is plain, and without hills: the country is also very populous. From Sanga, in 18 days they came to Ogari, where there is a large river called Magrassie, having passed Gunda, Shisha Sanji, and Sangosi. From Ogari to the residence of the great sultan of Monomoi, through the country of Oha, is 12 days, which I consider not the time taken up in actual travelling, but the whole time occupied in passing through this state. The number of days' journey actual travelling may be here taken at 5 or 6 days. The days actually travelled will stand thus:—

Boami to Bahar or River	21 days, 179 miles, s.s.w.
Bahar to Sanji	16 „ 136 „ w.
Sanga to Sangara	10 „ 85 „ w.
Sangara to Ogari	18 „ 153 „ w.
Ogari to capital on lake	6 „ 51 „ w.

Total 71 days. 604 m.

But 5 days, or 45 m., should probably be deducted.* The whole journey occupied 140 days.

The people on the shores of the lake are as fair as the Abyssinians. The Monomoi country is about 2 months' journey from N. to S., and 1½ months' journey from E. to W. The lake at the capital is about the breadth of the channel between Zanzibar and the main land, or 24 m. He thinks the lake extends to the westward of S. There is, according to Gamitto, a strong current on the lake to the eastward. The inhabitants on the W. side of the lake are called Yoah, and are Mahommedans. The lake contains multitudes of fish. A great trade in cotton cloths, &c., is carried on from the western shores of the lake with the western coast of Africa, the journey to which occupies six months. There are many islands in the lake. The boats in it are long and narrow, and without sails. The shores are studded with sand hills, and there is a considerable sea or swell upon it, and its depth is represented to be considerable. The river Massic joins the river which has its origin in the lake.

The position of the Bahar and river Matoney will thus be in 6° 38' S. lat., and 36° 8' E. long. The position of the capital of Monomoi, and the eastern shore of the lake near its S. end, will be in 6° 34' S. lat., and the centre thereof in 29° E. long., and N. 31° E., or 120 miles, from the capital of Cazembe.† This may be assumed as its true position, and from thence it stretches away northward, inclining to the W. probably 180 m., its breadth increasing considerably, but the extent uncertain. The land around it everywhere is low, but beginning to rise from its northern shore till it becomes very mountainous as it nears the Equator.

With reference to these interior African lakes I have long held the opinion that they are in more instances than one merely the expansion of large rivers running through a level country during the inundation. Hence the discrepancy regarding their extent and position according to the season of the year, and the points and times at which native travellers reach them. I am now convinced that such is the fact. From the lat. of 3° S. to the lat. of 10° or 12° S., and from the long. of 34° E. to probably the long. of 25° E., Africa is a level country, deeply intersected by

* See P.S. at page 127.

† See also P.S.

large streams, and widely inundated by the floods in those rivers during the time of the tropical rains, but leaving in many places lakes greater or smaller, as may be, in the dry season.

The smaller lake, situated to the *e.* and to the *s.*, is nearer the sea than has hitherto been supposed. Dr. Krapf told me that it was fourteen days' journey due west of Kilwa or Quiloa. This in African measurement is about 210 geographical miles. In this case its position, say the centre, would be in 9° *s.* lat., and $35^{\circ} 20'$ *e.* long. It is surrounded by very high mountains on the *e.* and the *s.*, so high that it is said snow is to be found on the former. The lake lies on the western side of these mountains at some miles distance. A considerable river enters it from the *s.* It is doubtful if it communicates with the sea. Gamitto says that it does not. Hitherto it has been stated that the river Ruvuma issues from it, but I am satisfied that this statement is incorrect. If it has any outlet, the Cuavo is most likely its drain. The ancient name, Maravi, was probably given to it because the country known as Maravi formerly extended northwards to Cape Delgado, the lake forming its north-western boundary. The name N'yassa we now know to be incorrect. The journey of the Arabs across the continent settles that point, for we find N'yassa, or N'haça, is an extensive district running eastward from near the Aroango, through the country of the Tumbucas, eight days' journey to the *s.* and *s.e.* of Mavazamba in the direction of Mozambique. In this district we hear of no lakes, but some rivers. The district is represented as fifteen days' journey in extent, where every town is mentioned by the name N'haça through a distance of probably 260 m.

Gamitto has a remarkable passage where he states it is uncertain if his Nhanja Grande and Nhanja Pangono join, or are some days' journey distant from each other. His Pangono, clearly the river Pangany, is several days' journey distant from the Nhanja Grande (Great River), or Luffia.

Major Monteiro and Captain Gamitto have given us minute and valuable details regarding the manners, the customs, and character of the population of that part of Africa through which they travelled. They are interesting, and show a considerable degree of order and civilization. In Cazembe and the capital much order prevails. It is laid out in squares. Chiefs are appointed to almost every department necessary to be looked after. No one can interfere with the other, while all are amenable to the sovereign. Like the most civilized nations of Europe, they have regular markets, custom and excise-taxes, at the pleasure of the government, and rigidly exacted. When war arises they seize upon property, and tell the people that it is to preserve their liberties and to promote civilization. In this they are not much

behind Europe. The capital is a place of considerable size and population. The streets are broad, straight, and clean, and the houses circular, and, according to the representation given of them, rather neat and pleasing than otherwise. The most difficult thing the Muata has to contend with is, it would appear, to preserve and to secure the tranquillity of his numerous harem. But this is his own fault, by collecting so many females together. The man who has more wives than one at a time, will always and everywhere have, and justly too, the same difficulties to contend with.

The capital of Muata Hianvo, or Yanvo, is a point of considerable importance. On the accuracy of the point where it is fixed depends a good deal the correct geographical features of this portion of Tropical Africa. We have abundance of materials, but these are a good deal confused and unsatisfactory; we must wend our way through them in the best manner we can in order to approach to a satisfactory result. Dr. Livingston in his exploration supposes it to be in 24° E. long., and states that it is one month's journey, 300 m., from the ford of the Cassai or Loke. This would bring it to about $6^{\circ} 30'$ S. lat. It is stated to lie E.N.E. and N.E. of Angola and Cassangé. Mr. Cooley has stated it to be N.E. Gamitto says that it lies W.N.W. of Cazembe, and the Moluanes N.W. of that place; and in another place he says that Muata Yanvo is N.W. of Cazembe. In Gamitto, p. 485, we find it stated that the capital of the real Muata Yanvo lies N.E. from Angola, and also in the Appendix, p. 486, that it is 52 days' journey beyond the Coango, viz. 7 days from the river to Manzaza, and 45 days from Manzaza to Muata Yanvo. Pedro Baptista gives us tolerably accurate information about it and its true position. It is only of late that we obtained an accurate account of his starting point, namely, the Fair of Mucary, which is about one day's journey E. of Pungo de Andongo, and on the Coanza. To it, according to the narrative of his journeys in the *Annaes Maritimos*, we find in No. 9, p. 425, that, returning, he travelled 30 days from Bomba, situated one day E. of the Coango. From Bomba, in his advance, he went 39 days by Moxica to Lunconquexia, the "mother" or chief of Moropo. From places in his journeys to the eastward, we find, from the points determined astronomically by Lacerda, that he travelled at the rate of $9\frac{1}{2}$ geographical m. per day. This last distance to Lunconquexia gives 370 m., and brings it to $24^{\circ} 40'$ E. long., and about 5° S. lat. He makes no mention of any river passed in this distance, though there may be. It must be borne in mind that two native states in this portion of Africa were said to be governed, one by a male, the other by a female; the one 15 days' journey distant from and to the N. of the other. It would appear that Pedro proceeded from Lun-

conquexia to the capital of the other state. On his return from it (see No. 9, pp. 423, 424) he travelled 47 days, say 437 m., to Bomba, passing on the 22nd day the great river Cassais in a canoe, and in his course several other rivers. At the end of 33 days he came to the boundary of the territory of Muata Yanvo, and 14 days N.E. from Bomba. On his advance to Cazembe and Teté, Pedro travelled from the northern capital first 16 days, to Lunconquexia with the sun on his left hand, thus going due s., and next from Lunconquexia, or as he in No. 5, p. 170, calls it, Luncongucha (in No. 7, p. 282, he calls it Luconquessa), he travelled 20 days to Camoa in the same direction. From this place he turned eastward towards Cazembe, marching, as he says, with the sun in his face. The astronomical observations made by Lacerda enable us to ascertain his true bearings, namely, in the one case s., and in the other about s.e., and as carefully delineated in the map, as are also the rivers passed, and especially the most important of them, such as the Lualaba, Lubiry, &c. &c. The position of the northernmost state would thus be in $24^{\circ} 30' \text{ E. long.}$, and $2^{\circ} \text{ s. lat.}$; and that of the other, in $5^{\circ} 10' \text{ s. lat.}$

Major Ferreiro* enumerates the rivers crossed between the Coango and the capital of Muata Yanvo, viz. the Luachama, Lombe, Quizemba, Luhi, Lueze, and the Lulua, which is the last, but he makes no mention of the Cassais or the Cassaby, nor do others. How then is the Cassaby to be placed? If it goes to, and is, as Graça and others state it to be, the river of Sena, it never can run to join the Coango. Of its most important affluent, the Lualaba, we have clear and satisfactory accounts, namely, that it is the boundary between the lands of Cazembe and its superior chief, Muata Hianvo, or Moluane, and that it in fact encompasses all the lands of Cazembe to the N.W. and N. This will give the Cassabe the direction that Ladislaus from ocular observation gave it, namely, to the N.E., and to the Indian Ocean, in which case it, or the united streams, must be a feeder of the Great Lake, Taganika, in the Monomoi country. It is remarkable that Graça states that the Cassabe comes from the N.! In this case, the "Loké" of Livingston, may be a different river from the Cassabe. All these points require further research.

The jealousy of the chief of Cazembe prevented Monteiro and his fellows from visiting the Luapula, three days' journey distant, and a great Sierra, two days' journey more beyond that river, supposed to contain crystals and precious stones. After advancing two days they were compelled to return. In the account of places and countries to the north and west of Cazembe the narrative is deficient; this is much to be regretted. If they had been able to

* See Gamitto, App. p. 485.

advance to any material distance from Lucenda, either to the north or to the west, they would have fixed distinctly some important points connected with the geography of this portion of Africa.

The sources of the Coango, and the west branch of the Leeambye and the Cassabe, have been fixed by the researches of Dr. Livingston. The magnitude of the united streams of the Leeambye and the Leeba (400 to 600 yards broad, and the Leeba singly 230 yards, in the rainy season) shows that the source of the former, before it is joined by the latter, must be distant, and runs perhaps to the distance and in the direction as delineated in the map. It is supposed, indeed it seems certain, that elevated or high land runs through the interior, from Sierra Maxenga on the east, to the sources of the Leeba and Coango on the west, dividing the waters that flow north-eastward from those that flow southward and south-westward. In these, and parallel with the springs of the Leeba, the Leeambye no doubt takes its rise.

Before turning to the consideration of the important river Cassabe, it is necessary to observe that there are two great empires in Northern-Central and Tropical Africa, namely, Muata Yanvo or Yambo, and Moropoa. The former contains no fewer than 26 provinces or states, amongst which are Cazembe and its vassal states. The great empire reaches south to about the tenth degree of s. lat. It lies about N.E. from Angola, and to the eastward of the Coango, in its upper and middle course. Cazembe and its vassals lie S.E. of its sovereign state. North of Muata Yanvo lies the territory of Moropoa, or, as it is sometimes pronounced by the Portuguese and natives, Molua, and its people, Moluas or Moluanes. It stretches north to the vicinity of the Equator, and comprehends several powerful provinces or states, and between it and Muata Yanvo there are frequent wars. The southern boundary of Moropoa is probably in about 5° s. lat.

And now to return to the river Cassaby, which has its source in the same high lands as the Coango and Leeba. Where Dr. Livingston crossed it at a ford, 11° 17' s. lat., he found the stream 120 yards broad (the middle of the wet season), and the current running N.E., afterwards, as he was informed, changing to E.N.E. He was also told by natives that it was an affluent of the Coango; but this is either a mistake, or the Casai, Kasye, or Loké of Livingston is a different river from the Cassaby, about to be considered. Regarding this we have two specific authorities, namely, the Hungarian officer Ladislaus, and J. Rodriguez Graça, a Portuguese merchant, who penetrated deeply into the continent and along this river in the years 1843 to 1847. Both travellers started from Bihé for their interior journeys. The first narrative of Ladislaus is so confused, that it is not possible to know, or to fix, exactly the rivers that he crossed in his more

northern route. After he had travelled 33 days, he reached the banks of the great river Cassaby-Kandal at Yah-Quilem, in long. $23^{\circ} 43'$ E. The distance travelled would give $10^{\circ} 30'$ s. lat. This is his statement, in a letter written to his father at that place. In the account which he gave of his travels when he returned to Benguela, as published in the official journal at that place, it is stated that he "penetrated to $4^{\circ} 41'$ s. lat. and $25^{\circ} 45'$ E. long. into the interior," from which it would appear that he travelled, perhaps descended, the river eastward to that point. He says, that in its onward course, it divides the secondary kingdoms of Lovar and Catema Cabito from the extensive empire of Lunda; and that after being joined by the great river Lulua (Lualaba) it changes its course to the N.E., is a league broad, and carries, or mixes its waters with the Indian Ocean in a part of the coast unknown to him. He further states, that the great rivers Lu-gebungo, Lutembo, Lume, Luena Quisomaje, and other great streams (navigable), are affluents of the great river Lecambye, or Zambesi, which enters the Indian Ocean at Quilimane. This is important and decided testimony, and is borne out by various other authorities. He calls it the enormous volume of water, and states that it rises in the high lands of Quiboque, where also the rivers Vendica, Cuiva, Cazeme, and Cambale take their rise. Not the slightest idea is by him expressed, that any of the great rivers that he mentions, run to the western coast, but quite the contrary. He must have been a long way into the interior, for on his return he states that he visited Quinhama (province of Lovar), where he met some Arabs, from whom he got a good map of the interior of Africa.

J. Rodriguez Graça, having reached Bihé from Loando, started from the latter place for the interior. Passing the Coanza on the 5th day from that part of Bihé whence he began his journey, he at the end of 12 days reached the southern boundary of Quioco or Quiboque, where he found the river Muangoa, which runs to the Cassabe beyond or to the north of the highlands mentioned by Dr. Livingston and Ladislaus. Previous to his reaching the Muangoa, he had crossed the rivers Cotia, Cuiva, &c., which join the Coanza in its right bank. From the southern boundary of Quioco to the point where he reached the Cassabe, he spent 15 days, 72 leagues or 240 m. distance travelled, but by no means that distance made good in the general bearing of his route. There is a great defect in Graça's narrative, where he gives us merely the distances and the names of some places and provinces; only in one or two instances he gives us the bearing of the Lulua or Lualaba, east from the Cassabe, previous to their junction in the province of Challa, 5 days before he came to the capital of Muata Yanvo. It is only by the names in a few places, and a reference

to the accounts given by other travellers, that we can trace, though by no means very accurately, the extent of his journey. The Lualaba, we know, bounds the territories of Cazembe Proper; and Cazembe, we are told, and I believe truly told, lies s.e. of the dominions of the sovereign power, Muata Yanvo. At the point where he first reached the Cassabe (June 16), the end of the wet season, he says, it was not possible to wade it. He takes it as a tributary to the river of Sena and the Zambesi, and states that it runs in all the territory of Muata Yanvo. He mentions that he encamped on the margin of the river the day after he reached it, in the great province of Catende, the chief of which lives on the margin of the river. In Dr. Livingston's map we find the village of Catende close upon the banks of the river, lat. $11^{\circ} 26'$ s., and long. $21^{\circ} 40'$ e. This may be the same place, but if so it scarcely gives his distance, nor does the depth correspond at that place, and at the point where he could not wade it. When Dr. Livingston crossed it, the middle of the wet season, it was only 120 yards broad: a small stream certainly it would become in the dry season. But Graça probably means that the great sovereign of Catende lived on the banks of the river, near to the point where he reached it, and to the n. of the village of Catende, which may have given the name to the kingdom. It is to the n.e. of Quioco, and is bounded to the s.w. by it. From the point where he could not wade the river he travelled principally along its banks $36\frac{1}{2}$ days, $162\frac{1}{2}$ leagues, 542 geographical miles, to the capital of Muata Yanvo; 15 days of this number he travelled along the right bank of the river, and at the end of 6 days he came near to the river Luana, a mighty river in the rainy season. At the end of 6 days he turned to the Cassabe again, and on the 3rd day he crossed the Cassabe, and marched along or near its banks, and on the 2nd day again crossed the river in the province of Difunda. On the 2nd day he marched e. and left the Cassabe on the left; on the 10th day thereafter he came to the margin of the river Lulua or Lualuba; on the 3rd day he encamped at the chief town of the great province of Challa, where the land is fertile, and agriculture carried on. In this province the mighty river Lulua joins the Cassabe; in 5 days more he reached the Banza, and chief town of Muata Yanvo on the 3rd September, 1846, and from which place he dated and transmitted his journal and communication to the Government of Angola on the 20th October, 1847.

I have been thus minute in the details of this journey in order to ascertain, as accurately as possible, the distance and direction travelled. He distinctly states that at his first point reached he found the river running eastward, under the impression that it formed the head waters of the Lecambye or Zambesi. But it

may be observed, that every river the Portuguese on or from the west coast saw or heard of running eastward in this portion of Africa, they always considered as belonging to the Zambesi of the east.

Ladislaus does not tell us how the Cassaby-Kandal flows at his utmost point, but in his narrative, where all things are condensed by his copyist, he pointedly says that "the enormous bulky river Cassabe, in its course to the east, divides the kingdoms of Lobar and Catema Cabita from the extensive empire of Lunda (Muata Yanvo and Cazembe), where it unites with the river Lulua, changing its direction to N.E., and with a breadth of one league mixes its waters with the Indian Ocean in a place not yet known." The position of Lobar, pretty accurately known, and Yah-Quilem, sets the dubious point at rest. Again, Graça tells us that the Cassabe so traversed "springs" from the north; this river Ladislaus reached in $9^{\circ} 30'$ s. lat., and $23^{\circ} 15'$ E. long., to the N.E. of the place where Dr. Livingston places the Cassabe, which is the name of a state as well as a river. Graça's travelling distances must be considerably reduced, including, as they do, turnings and windings, and bends of the river, and also as they appear to be excessive; for 6 and 8 Portuguese leagues (19 and 25 miles) in one day, is too much for African travelling, however unincumbered. This will bring his journey and distance into something like the shape which is here given to it. He tells us, moreover, that he reached the little river Luli, or Lueli, two days before he reached the Cassabe; and he distinctly informs us that the great river Luloa, or Lualaba, before its junction with the Cassaby, is found to the eastward of the latter. The reduced distance travelled by Graça (deducting *one-fourth*) would be about 800 miles in general and direct bearings. Two points appear sufficiently clear, namely, that the united streams of the Casaby, or Cassabe, and the Lulua, or Lualaba, unite in the province of Challa, belonging to the empire of Muata Yanvo, that their united stream bends its course N.E.; and it is remarkable that neither Ladislaus nor Graça, at their extreme distances, heard anything of the Great Central Lake, which, had it been of the enormous magnitude that has been represented, could scarcely have escaped notice by some of the people, traders as they all are, who dwell in the extreme points that they reached.

It is obvious that all the travellers adverted to, consider that all the rivers of importance that they met with, in the interior, run to the east coast, both from what they themselves saw, and from information they obtained from the natives. There are also some more rivers crossed in his course northwards, or rivers that he heard of running westward, but the names of these are so blended together, that it is impossible to assign them a proper position.

We may, however, soon receive more accurate accounts of

these interior parts. The Portuguese now reign paramount at Cassangé, once the most powerful state in the interior of Africa. Three years ago, they, in the modern custom of spreading civilization, drove out one Jaga and appointed another, and at the same time concluded a treaty of peace and commerce with the great chief of Yanvo, by which they are to enjoy the privilege of trading in all his territories, and also through them with the states more to the eastward. It may also be hoped that the journey of Ladislaus complete, and also his Arab map of the interior, may yet appear. They are worth looking after.

Postscript.—Correcting Lacerda's longitudes as has been stated, Teté will stand in $16^{\circ} 22'$ s. lat. and in 33° E. long. Lacerda places Maxenga in $15^{\circ} 19' 15''$ s. lat. It is about 61 m. from Teté. Lacerda's course from Teté to Mazavamba was N.N.W., the average variation of compass $22^{\circ} 24'$. Teté is 24 journeys by the river from Sena.* At 10 miles per day this would give 240 miles. Eleven days of this voyage are in the district of Teté.

It is also necessary here to observe that Gamitto places Zumbo at a considerably greater distance westward from Teté.† But he is certainly wrong, and has been misled by erroneous estimates of distances. This point, however, Dr. Livingston will soon enable us to determine accurately. With reference to the present residence of the African chief Moselekatse, Moffat tells us that it is 10 days' journey (say 85 m.) s. of the Zambesi, or $19^{\circ} 21'$ s. lat. Its position in his rough map is considerably to the E. of the meridian of the cataract in the Zambesi. It will thus stand between 27° and 28° E. longitude, and distant from the Limpopo 220 m. due s. He says that after passing the Shashe the country became exceedingly mountainous. The Zambesi of the N. joins the Leeambye 60 or 70 miles above the junction of the Aroango of the N. with that river.

Since the preceding paper was written, at the close of last year, the author has received from Lisbon that excellent Portuguese periodical entitled '*Boletim e Annaes do Conselho Ultramarino*,' from its commencement to March 1856. Besides other amusing matter regarding Africa, it contains a full account of Graça's interesting journey and its objects, and also a more detailed and distinct account of the Northern journey of Ladislaus, with the abstract of his subsequent most important journey from Benguela to the S.E.—as far as lat. $20^{\circ} 5'$ s. and long. $22^{\circ} 40'$ E. The numbers also contain a very particular and remarkable account by B. J. Brochado of the Portuguese African settlements in Benguela,

* See *Boletim e Annaes do Conselho Ultramarino*, No. 4, p. 33.

† See *Annaes*, No. 6, p. 54.

Bihé, and countries s.e. from it. These latter, according to the information Mr. Brochado had collected, agree with the subsequent account given by Ladislaus, of all that he saw and met with in his last journey.

Let us take Graça's narrative first in those points which tend to elucidate more clearly his important journey, simply premising or observing that its object was to persuade the native chiefs every where to relinquish the slave-trade and to betake themselves to cultivation and commerce. His advice and suggestions were met in a friendly spirit. From Gombe on the Coanza (the Coanza where crossed was 240 ft. broad and from 8 to 20 ft. deep), he was 28 days marching till he reached the banks of the Cassabe about Catende. Gombe also, he tells us, was the point where his and all other caravans commence their journey for Cassabe, Bunda, Lovar, Amboellos, &c. This at once gives us the direction in which he marched during this first part of his journey, namely N. 40° E. From the point where he first reached the Cassabe he was 9 days till he reached the state of Cabango, on the banks of the little river Canhaje. This Cabango, probably the Cabango of Livingston, is distant 130 m. (geog.) from Catende, and through which State, namely Cabango, Dr. Livingston was told at Cabango that the river Cassabe flowed. Between Catende and Cabango they in one part (about half-way), left the Cassabe on the left hand. By doing this he must have been marching eastward. In like manner, when he crossed and recrossed the Cassabe at and below Sucumbuge, he must have been going to the eastward of N. Without this he could not have taken a course to the E. to reach the Lulua or Lualaba. After this and reaching Challa, we hear no more from him about the Cassabe. Had he marched north-west from the kingdom of Cabango 30 days (120 leagues) he would have come within a short distance of the junction of the Coango with the Zaire. Graça states pointedly (Annaes, No. 11, p. 157), that Cazembe is E.S.E. of the Banza of Muata Yanvo, which great State, he also says in the same page, is encompassed or surrounded by the very great river Cassabe, and which is exactly like the Lulua or Lualaba. Again in Annaes, No. 10, p. 123, he says that the Cassabe makes its way through the whole empire of Muata Hianvo.

In Annaes, No. 22, p. 228, of March, 1856, we have a more distinct account of the journey of Ladislaus in 1849-50 than the previous short abstracts which had been received had given us. In all the material points it is the same, but more specific. From the source of the Coanza, lat. 15° 9' S. and long. 20° E., he marched E.N.E., then E., and then about N. till he came to the high dividing ridge in Quioco, lat. 10° 6' S. and long. 21° 19' E., at an elevation of 5200 ft. He reached the banks of the Cassabe

in long. $23^{\circ} 45'$ E., crossing the country near the sources of streams running to the Leeambye on the one hand and to the Cassabe on the other. He calls the latter a very mighty river, deep and turbulent, and says that after separating the kingdoms of Lovar and Catema-Cabeta from the extensive empire of Lunda, it changes its course more to the N.E., and being joined by the Lulua or Lualaba, the united stream, one league broad, pursues its way to the Indian Ocean at a point, to him, unknown. He penetrated to $4^{\circ} 41'$ s. lat. and $25^{\circ} 45'$ E. long., and visited places which he considered to be the heads of the streams which form the river Zambesi of Sena. He obtained an immense deal of important information regarding all these interior parts.

His second journey was equally important. From Benguela and Bihé he penetrated in a S.E. direction to $20^{\circ} 5'$ s. lat. and $22^{\circ} 40'$ E. long. through countries hitherto unknown, sterile and thinly peopled with tribes most barbarous and ferocious, the Mucancallas excepted, a distinct race and of more industrious habits. He dwelt nine months in the great province of Quinhama, situated between the Cunene and the Cubango, which latter river, larger than the Cunene, and rising in the same district of country, pursues its way to the S.E. In its middle course and near Derico or Indirico, it is joined by a large river called the Cuito, coming from the northward. The united stream pursues its way eastward ten days' journey from Muçago to the Riambege or Leeambye in the country of the Mococotas or Macololos. This is very curious and new, and is confirmed by the accounts collected by Brocheda. The Cubango therefore must be the parent stream of the Chobe, and accounts for that immense flow of waters which in the rainy season Dr. Livingston tells us inundated the whole country round the Chobe, forming with the inundation of the Leeambye in 1854 a lake of near 120 miles in extent. Near Quinhama is Aimbiri, the Embarah of Dr. Livingston and the Bechuanas. Brochado says that the Riambegé runs to the eastward deep into the interior, and that the banks of the Cubango are only cultivated in a narrow chain of small settlements, which supply the thin population with a scanty subsistence. There is no other river of any importance in the wide district mentioned, and whether the Teoghe is also a branch of the Cubango, is not stated, though, considering the level nature of the country, it is not improbable, especially during the rains. In referring to dates it appears that Ladislaus must, towards the end of his journey, have been at the time very near Dr. Livingston. He, at nearly his extreme southern point, heard of three Europeans who had come as far as the Muimbas and Moganguelas.

The great state of Quinhama begins about 15 leagues from the Cunene, and extends in the direction of S.E. 37 leagues. It is

a plain country without stones. The vegetation is good and abundant. In some places the soil is sandy. A full account of the journeys of Ladislaus accompanied by maps is in course of preparation for publication, and when they appear they cannot fail to be exceedingly interesting.

Adverting for a moment to the position of the great inland lake, it is proper to observe that in Lief-Ben-Said's narrative there is a discrepancy between the general summary of days travelled and that in the minute, or say daily enumeration. Which is right it is impossible to determine, but supposing the error to be in the latter, then four or five days or 40 miles in distance may be deducted. This will bring the capital of the Sultan to 30° E. long. and the centre of the lake so much more to the eastward. Thus placed, the capital will be 140 m. N.E. of Lucenda, the capital of Cazembe. Its length from N. to S. depends upon the accuracy with which the bearings in the northern and southern routes have been taken. The latter is considered sufficiently correct. The other, it is said, strikes the Lake about 8 days' journey from its extreme limit to the north.

The eastern source of the White Nile is, and from good information, in the position where I have placed it. Ptolemy places his western branch 1° more to the N. and 8° to the westward, and in this, from recent accounts and reports, there is good reason to believe that he is quite correct.

Although the interior of Southern Tropical Africa is generally a level country, still, in many places, it is mountainous. Where level it is an elevated table-land rising much above the level of the sea. As Lacerda approached Cazembe, he expresses his surprise at the degree of cold which he felt so near the Equator. In the vicinity of Cazembe there are several ridges of considerable elevation; around the sources of the Leeba, Coango, &c., the hills are high, and the country is generally mountainous along the Cassabe and Lulua. In Southern Benguela and Bihé the country is generally hilly. To the eastward of the Chobe and the Shaze it becomes very mountainous. From the Dragenberg mountains in the S. to the sources of the eastern branch of the White Nile in the N. an almost continuous chain of very high mountains are found. Round the sources of the Sofala and Manica rivers the country is extremely hilly. It is equally, if not more so, to the eastward of the Arroanga, and around its sources and along by Lake Maravi and Kilimanjaro. In the western portion round the sources of the Zaire and its tributaries, the country is certainly very hilly. In the district of Oholo or Holo to the west of the Coango, mountains are found rising to the height of 11,000 or 12,000 ft. above the level of the sea.
